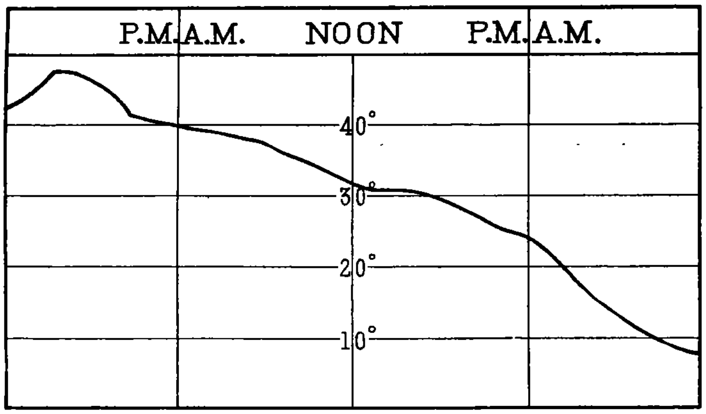

FIG. 3.—Winter type. Diurnal temperature curve; result of brisk northerly winds. Noon, January 16, to noon, January 18, 1901.

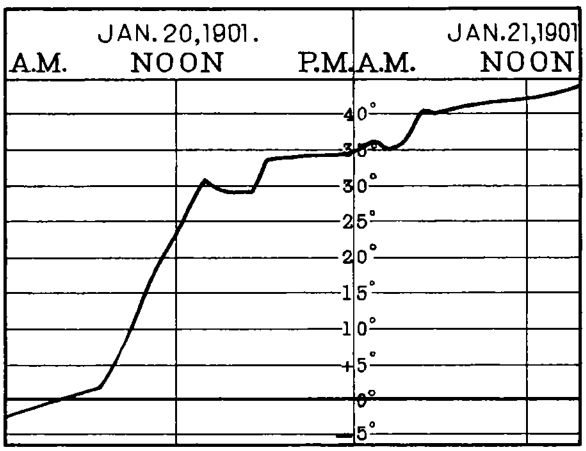

FIG. 4.—Winter type. Diurnal temperature curve; result of brisk southerly winds. January 20 and 21, 1901.

lation. The mean temperatures for individual winters depart decidedly from the normal winter temperature. The irregularity of the diurnal temperature curve in winter and the radical departure of the mean temperatures of individual winters from the normal winter temperature, result from the importation of large masses of air from far distant points.

In spring the temperature conditions recede from the winter types and gradually merge into the summer type. In autumn the temperature conditions recede from the summer type and gradually merge into the winter type.

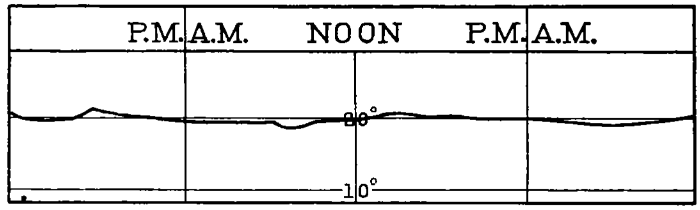

FIG. 5.—Winter type. Diurnal temperature curve; result of calm, cloudy weather. Noon, January 29, to noon, January 31, 1901.

SAMUEL M. BLANDFORD.

Section Director Samuel M. Blandford died February 9, 1904, at Boise, Idaho. Mr. Blandford was born June 15, 1866, in Prince George County, Md. His early education was obtained in the common schools and this was supplemented by the teaching of his father, Dr. J. H. Blandford. He enlisted in the meteorological service of the Army, October 15, 1887, and continued in that service until the organization of the Weather Bureau in 1891, when he was transferred to the civil establishment, in which he continued until his death. During his connection with the weather service Mr. Blandford served at various important stations, and by his integrity, fidelity, and ability won for himself the regard and commendation of those who knew him. His excellent work as an official was recognized by his assignment on September 19, 1898, to the charge of the important station at Boise.

NOTES AND EXTRACTS.

DESIRABILITY OF COMPLETE RAINFALL RECORDS.

The great importance of the study of rainfall and of the proper presentation of rainfall on our monthly and annual charts suggests that many will be pleased to examine the following table, which shows the number of regular and voluntary stations for which either complete or incomplete records were published in the respective monthly and annual section reports during the years 1901 and 1902. A complete record covers every day of the year, and is essential in making up normal values and departures from normals. Records of regu-

Total number of complete and incomplete records of precipitation at regular and voluntary stations of the Weather Bureau, as published in the monthly and annual section reports.

State or Territory.	Area in units of 1000 square miles.	Population per square mile.	Number of published records of precipitation.			
			1901.		1902.	
			Complete.	Incomplete.	Complete.	Incomplete.
Alabama	51.5	35.5	50	20	47	24
Arizona	112.9	1.1	44	20	40	21
Arkansas	53.0	24.7	46	17	42	24
California	155.7	9.5	176	25	185	15
Colorado	103.6	5.2	64	22	61	18
Connecticut	4.8	187.5	14	0	14	2
Delaware	2.0	94.3	3	2	4	0
District of Columbia	....	....	1	0	3	0
Florida	54.2	9.7	63	9	50	22
Georgia	59.0	37.6	66	28	57	39
Idaho	84.3	1.9	25	17	26	18
Illinois	56.0	86.1	84	3	79	24
Indiana	35.9	70.1	46	15	46	15
Indian Territory	31.0	12.6	*	*	*	*
Iowa	55.5	40.2	103	17	99	26
Kansas	81.7	18.0	65	19	66	28
Kentucky	40.0	53.7	41	12	38	22
Louisiana	45.4	30.4	43	14	33	19
Maine	29.9	23.2	17	0	14	7
Maryland	10.0	120.5	37	20	36	13
Massachusetts	8.0	348.9	22	0	21	3
Michigan	57.4	42.2	106	21	109	23
Minnesota	79.2	22.1	54	17	55	13
Mississippi	46.3	33.5	36	19	43	14
Missouri	68.7	45.2	77	13	76	14
Montana	145.3	1.7	31	28	26	30
Nebraska	76.8	13.9	80	11	108	36
Nevada	109.7	0.4	35	4	17	27
New Hampshire	9.0	45.7	16	0	15	1
New Jersey	7.5	250.3	45	10	50	9
New Mexico	122.5	1.6	26	23	23	21
New York	47.6	152.6	75	22	93	15
North Carolina	48.6	39.0	49	13	49	16
North Dakota	70.2	4.5	43	4	26	12
Ohio	40.8	102.0	78	7	93	40
Oklahoma	38.8	10.3	....	....	....	....
Oklahoma and Indian Territory	69.8	11.4	34	22	31	34
Oregon	94.6	4.4	63	31	64	23
Pennsylvania	45.0	140.1	69	23	69	18
Rhode Island	1.1	407.0	6	0	6	0
South Carolina	30.1	44.4	48	9	50	11
South Dakota	76.8	5.2	46	19	45	23
Tennessee	41.8	48.4	52	20	49	29
Texas	262.3	11.6	68	25	85	15
Utah	82.2	3.4	41	23	41	27
Vermont	9.1	37.6	13	1	12	2
Virginia	40.1	46.2	32	14	28	27
Washington	66.9	7.7	48	26	52	22
West Virginia	24.6	38.9	45	10	43	15
Wisconsin	54.4	38.0	41	28	49	17
Wyoming	97.6	0.9	28	20	31	17
Total	....	....	2,398	726	2,499	873

Total number of complete and incomplete records, etc.—Continued.

*See Oklahoma.

lar stations are complete unless destroyed by fire or other accident. Incomplete records may sometimes be completed hypothetically and used to fill up the details of a special chart, but they can not give us the annual or seasonal periodicity that is so important for many studies. In some sections the rain gages of the voluntary observers have all been inspected by the respective section directors; in other States this work is not yet quite complete. Practically all stations use gages of the standard Weather Bureau pattern having eight inches as the diameter of the inside of the rim of the receiver. The exposures are generally satisfactory to the inspector, and this means that the gages are not unduly sheltered by buildings and trees; if not satisfactory, the trouble is remedied if possible.

Owing to the changes that frequently take place among voluntary observers and stations, it must necessarily happen that some records begin and others stop in the midst of any given year, but as far as possible these breaks ought to be prevented, since a fragmentary year contributes so little to our knowledge as compared with a complete record.

The fact that the total number of rain gages at regular Weather Bureau stations is over 180, and at voluntary stations over 3000 may possibly lead one to think that we are providing fairly well for the collection of rainfall statistics, but when we consider that from these we received only 2000 complete station records, we must see that we are not doing nearly as well as is required by the urgent demand for information by those who are at work on the problems of river navigation, arid land irrigation, city water supply, and water power for manufacturing plants of all kinds. Every State and railroad in the country ought to follow the example of the California Railway Company, and maintain a large number of rain gages and records as a contribution to our knowledge of the climate of their localities.

Would it not be practicable to stimulate the keeping of complete rainfall records, and to diminish our large proportion of incomplete records, 25 per cent, by offering some special reward or honor? Mr. Symons adopted this plan in order to build up his great British rainfall system. The result was about 1000 complete rainfall station records for 40 continuous years, so that we know the laws of rainfall in Great Britain better than for any other country. If we had 30,000 stations, instead of 3000, it would not be too many for the great area of the United States.

THE WEATHER OF THE MONTH.

By Mr. W. B. STOCKMAN, District Forecaster, in charge of Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and VI.

A ridge of mean barometric pressure, with readings of 30.15, or higher, extended from the Canadian border of northeastern Montana, North Dakota, Minnesota, Michigan, and the lower Lake region, southward and southeastward to the Gulf coast of Louisiana, Mississippi, and Alabama, to the central portion of the Peninsula of Florida, and to the coast of the south Atlantic and middle Atlantic districts. The crest of mean pressure, with a reading of 30.26 inches, overlay the Valley of the Red River of the North.

The mean pressure was low over Washington, Oregon, and the western portions of the middle and northern Plateau regions, with a minimum mean pressure of 29.69 inches reported from the region of the San Juan de Fuca Strait.

The mean pressure was below the normal over the Pacific and Plateau and practically all of the slope districts, and above the normal in all districts to the eastward of the slope region.

The mean pressure was .10 inch, or more, below the normal over the northern and middle Plateau regions, the deficiency increasing toward the westward and northward until it amounted to —.31 inch over the northwestern portion of Washington.

The greatest positive departures from the normal amounted to + .15 to + .18 inch, and occurred over the upper Lake region, North Dakota, and the northern portion of the upper Mississippi Valley.

The mean pressure decreased from that of the preceding month over the region to the westward of a line drawn from southeastern Lousiana northwestward to the Canadian border of central Montana, and over Maine; in all other districts the pressure increased.

The decrease in pressure was, as a rule, marked, and increased from —.10 inch over the central portion of the slope regions and southern portion of the Plateau regions westward and northwestward until it amounted to slightly more than —.40 inch on the coast of Washington.

The increase in pressure over the preceding month was not so marked, the maximum changes occurring over the Lake region, the greatest excess, + .15 inch, being reported from the central Lake Superior region.

TEMPERATURE OF THE AIR.

The distribution of maximum, minimum, and average surface temperatures is graphically shown by the lines on Chart V.

The average temperatures for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	8	19.5	— 6.5	—12.5	— 6.2
Middle Atlantic	12	27.1	— 7.4	—13.5	— 6.8
South Atlantic	10	45.0	— 4.0	— 8.7	— 4.4
Florida Peninsula *	8	63.3	+ 0.8	— 1.2	— 0.6
East Gulf	9	52.9	— 0.3	— 3.3	— 1.6
West Gulf	7	54.0	+ 2.4	+ 2.9	+ 1.4
Ohio Valley and Tennessee	11	33.2	— 5.0	— 8.9	— 4.4
Lower Lake	8	17.4	— 9.1	—15.8	— 7.9
Upper Lake	10	8.7	—10.2	—15.5	— 7.8
North Dakota *	8	— 1.3	— 9.3	—10.3	— 5.2
Upper Mississippi Valley	11	18.9	— 7.2	—10.8	— 5.4
Missouri Valley	11	21.1	— 3.3	— 2.3	— 1.2
Northern Slope	7	21.0	— 0.1	+ 6.4	+ 3.2
Middle Slope	6	36.7	+ 4.2	+ 6.1	+ 3.0
Southern Slope *	6	47.2	+ 6.6	+ 5.9	+ 3.0
Southern Plateau *	13	46.9	+ 5.5	+ 5.4	+ 2.7
Middle Plateau *	8	34.4	+ 4.3	+ 2.9	+ 1.4
Northern Plateau *	12	32.6	+ 3.7	+ 9.3	+ 4.6
North Pacific	7	39.8	— 0.8	+ 1.6	+ 0.8
Middle Pacific	5	48.6	— 0.6	+ 0.4	+ 0.2
South Pacific	4	53.8	+ 0.4	+ 2.0	+ 1.0

* Regular Weather Bureau and selected voluntary stations.

To the eastward and northward of a line drawn from the north-central portion of Florida northwestward to the Canadian Provinces, north of western Montana, the mean temperature for the month was below normal; and above the normal to the southward and westward of that line.

The maximum deficiencies occurred in the upper Lake region, and the maximum excesses in the southeastern portion of the northern Plateau region.

The mean temperature was decidedly below the normal in New England, the Middle Atlantic and South Atlantic States, Ohio Valley and Tennessee, Lake region, and the upper Mississippi and Missouri Valleys, and markedly above the normal in the Plateau and southern and middle slope regions, and west Gulf States. In the east Gulf States, and northern slope,